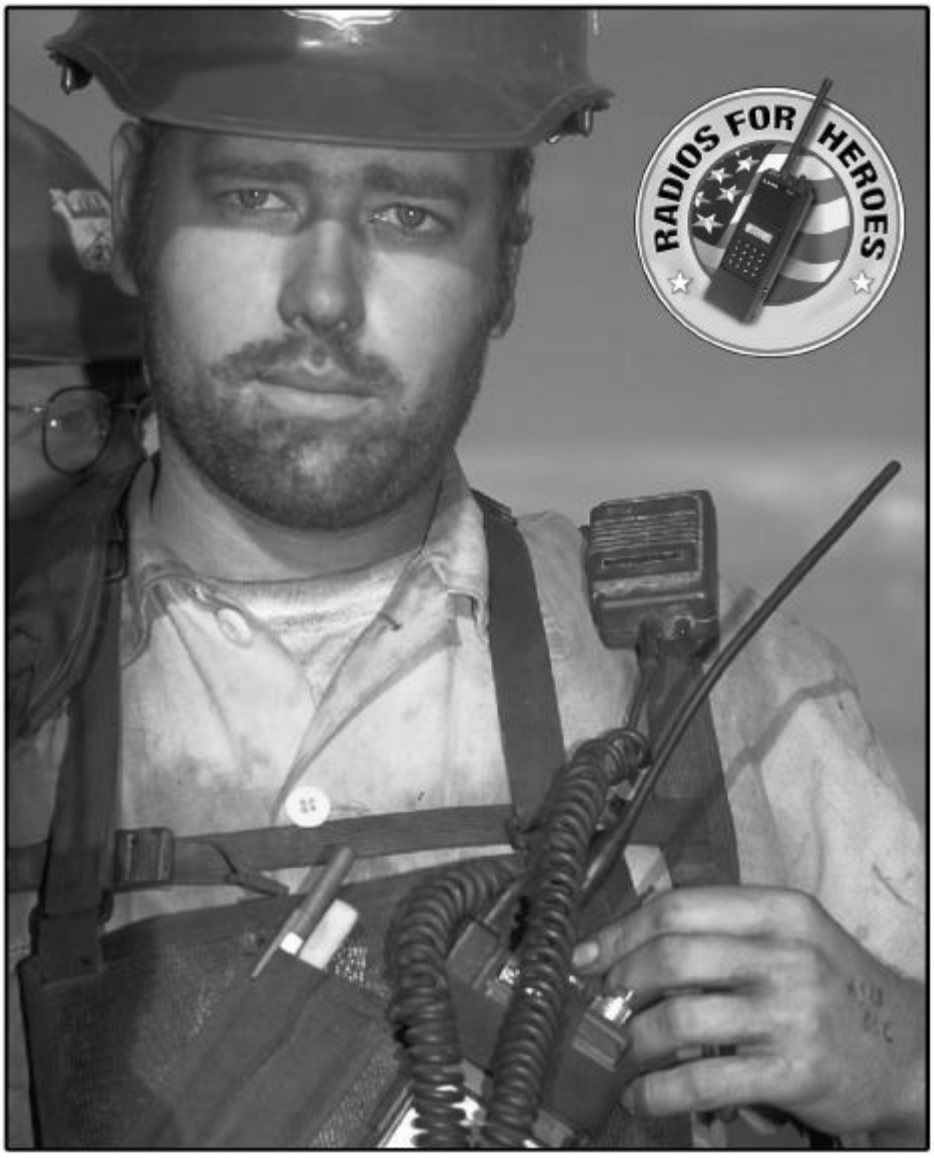
RELM BK RADIO



DPH Portable Radio Training Program

RELM Wireless Corporation
www.relm.com (800) 821-2900

Contacts

Regional Sale Representative

Progress Marketing Group – Mark Sexton
Phone: 800-368-8165
Mark@progressmarketing.net

Sales & Order Entry

Phone: 800-821-2900
Sales@relm.com

Customer Service

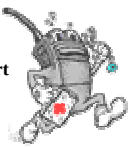
Phone: 800-422-6281
Service@relm.com

Contacts

Phone: 800-648-0947
Government@relm.com

Quality Assurance

Quality@relm.com



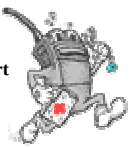
RELM Wireless Online

- **Product Information**
  - Data sheets
  - Accessories

- **Service Information**
  - Technical Forums
  - Parts Identifiers
  - Service Forms
  - Service Pricing
  - Service Bulletins
  - User Manuals
  - Firmware Patches
  - Email Signup for Bulletins and Specials

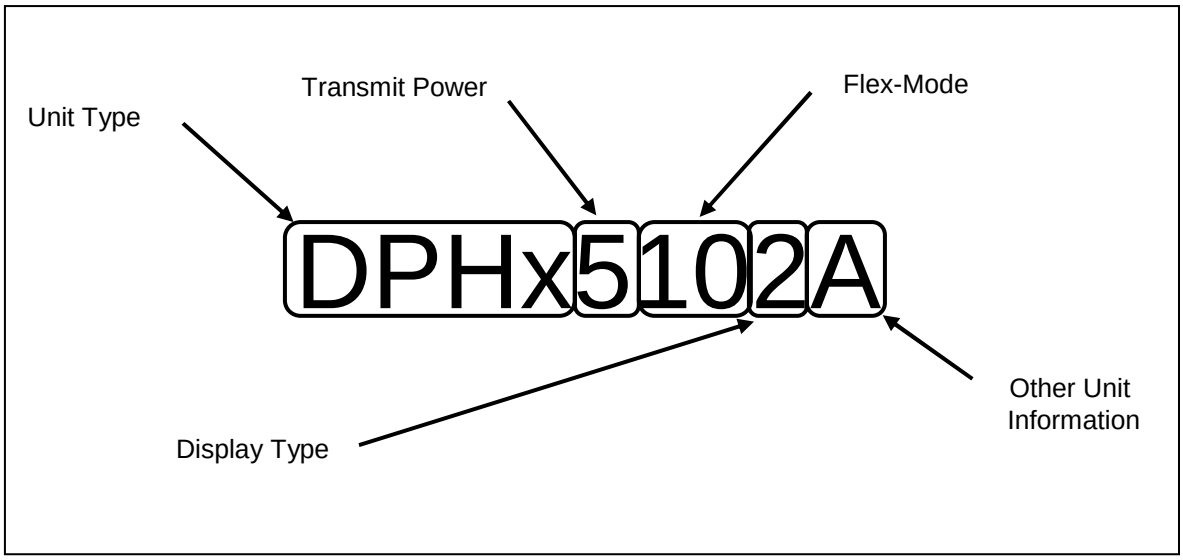
- **Sales Information**
  - Regional Rep Finder
  - Dealer Finder

- **Restricted Access Areas**
  - Contracts and Pricing Information

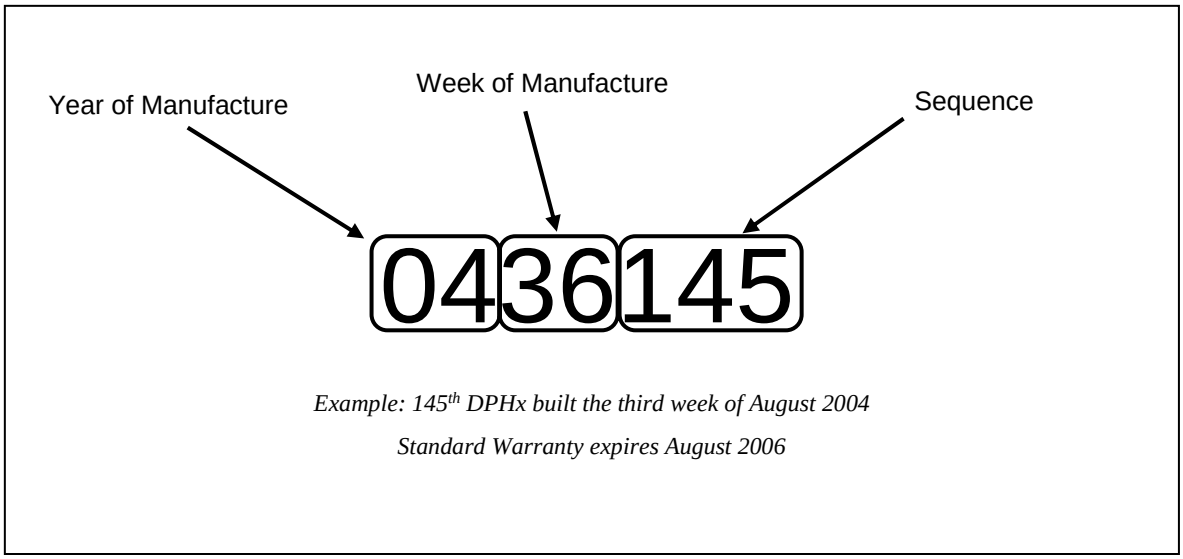


Radio Identification

Unit Type



Serial Number



Example: 145th DPHx built the third week of August 2004

Standard Warranty expires August 2006

Model Comparison

Functions

EPH

148-174 MHz
Global Password
Analog
14 Channels per Group
15 Groups
210 Channels
9 CG Channels
Single Priority
Preset Toggles

GPH

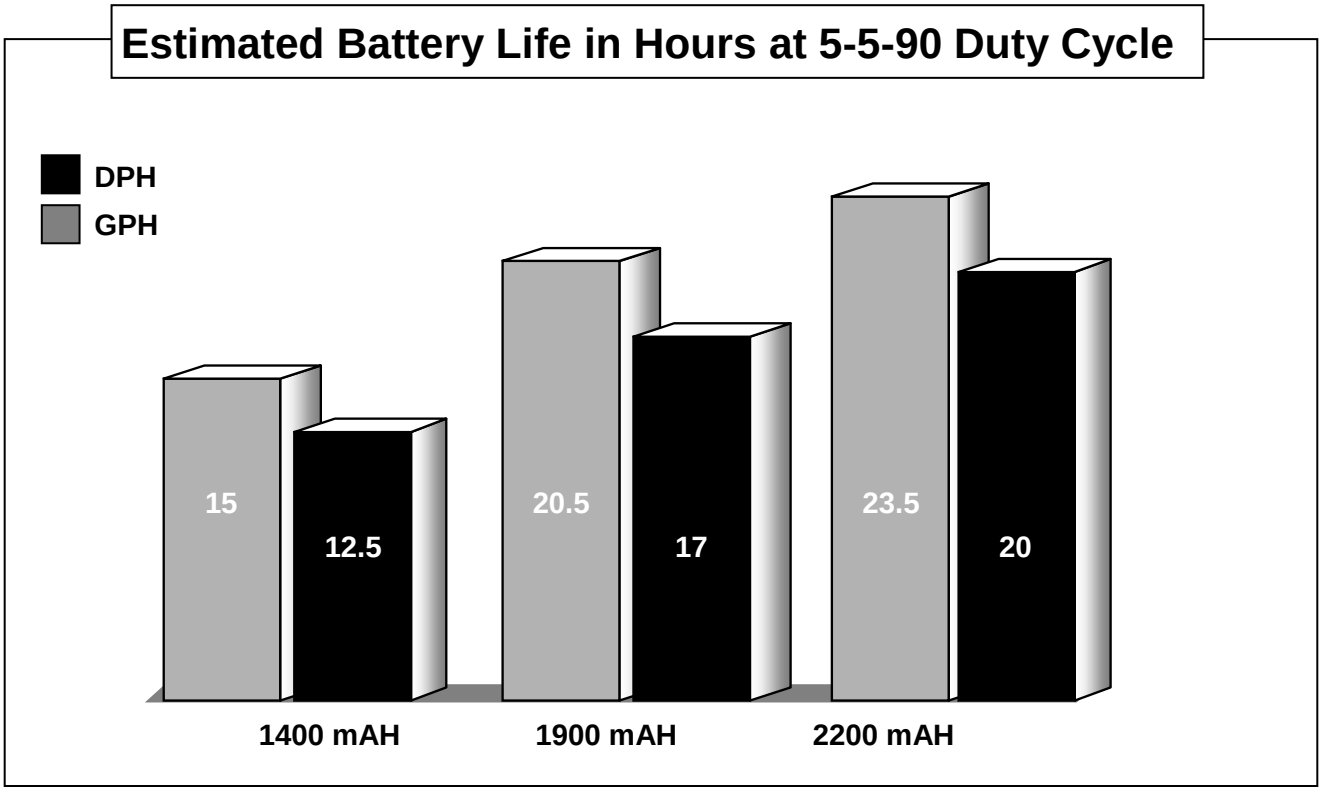
148-174 MHz
Group Password
Analog
16 Channels per Group
15 Groups
240 Channels
16 CG Channels
Dual Priority
Programmed Toggle

DPHx

136 -174 MHz
Both + PC/Clone Lock
P25 Digital/Analog
16 Channels per Group
25 Groups
400 Channels
16 CG and NAC
Dual Priority
Programmed Toggles

GPH-CMD

136-174 MHz
Global Password
Analog
20 Channels per Group
25 Groups
500 Channels
32 TXCG Pick List
Dual Priority
Programmed Toggles



RELM Wireless
Technical Support
(800) 422-6281

DPHx Advantages

- **User Defined Operation**
  All Channels programmable for analog, digital or mixed mode

- **Automatic Mode Detection**
  All receive channels programmable for analog/digital signal detection

- **Automatic Mode Response**
  Programmable analog or digital talk-back

- **Unit-to-unit Quick Call**
  Ten number user-programmable alphanumerical call list
  One button unit-to-unit call back

- **Field Programmable**
  Frequencies, Code Guards, Network Access Codes, etc.

- **Three-Level Password Protection**
  Limit programming access

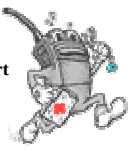
- **Familiar Physical Interface**
  Reduces end-user training time and errors

- **Clonable**
  Clones to or from previous BK Radio models

- **Programmable Switch Controls**
  Three toggle switches
  One rotary switch
  Keypad controls

- **Common Accessories**
  Chargers, batteries, antennas, programming cables, cases etc.

- **Battery Life and Audio Quality**
  Exceptional current draw and digital audio quality



DPHx Operation

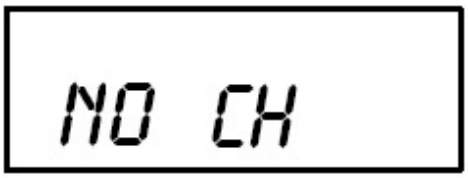
Keypad Lock

- **Press and Hold FCN Key to Lock or Unlock Keypad**
- **Radio beeps on key press when locked**

No Channel

- **If No Active Transmit or Receive Frequency is programmed the Radio will Display "DISABLED" and Emit an Alert Tone**

No TX



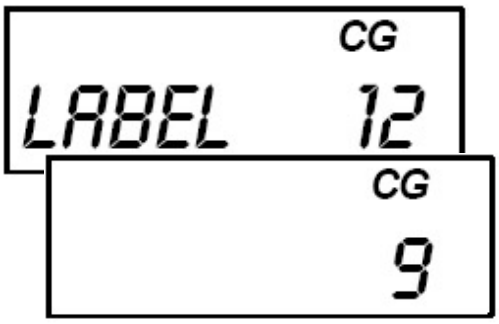
- **Receive Only Channels will Display "No CH' when attempting to Transmit**

Scan List

- **With Scan Turned off press the ENT Key to Add the Selected Channel to the Scan List**
- **Press the CLR Key to Remove the Channel From the Scan List**

DPHx Operation

User Code Guard

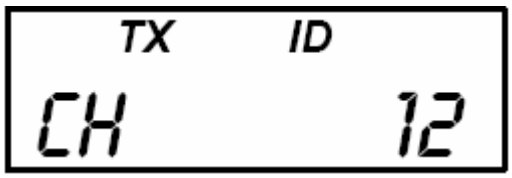


- **Use Number Keys to Select User Code Guard (Select Code Guard will momentarily be Displayed When Key is Pressed and When Transmitting)**
- **"CG" Indicates User Selected Code Guard In Use**
- **Press 0 Key to Use Channels Default Code Guard**

Priority 1 Selection

- **With Scan Turned off press the PRI Key to Set the Selected Channel as Priority One Channel**

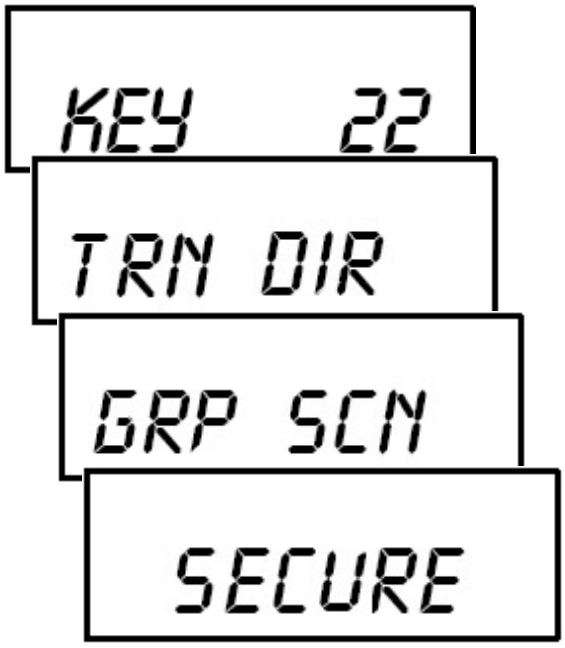
Digital Operation



- **When Transmitting or Receiving a Digital Signal the "ID" Icon is Displayed**

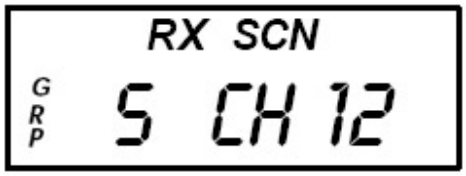
DPHx Operation

Keypad Function Select



- **Press FCN Key to Scroll Programmed Functions**
- **Press PRI Key to Enable or Disable the Displayed Function**
- **Factory Defaults: Repeater Talk-Around and Multi-Group Scan**

Group Scan



- **When Scanning Groups Group and Channel Numbers Indicate Scanned Channel (No Labels)**

Group Change

- **Press # Key**
- **Use Number Keys to Select Desired Group**
- **Enter New Group**

DPHx Operation

Channel Change

- **If Radio is Programmed for Keypad Channel Change, Press # Key Twice**
- **Use Number Keys to Select Desired Channel**
- **Enter New Channel**

View Group Label

Emergency Mode

DPHx Unit-to-Unit Call

View P25 ID

- **Press and Hold * Key to View Radio's P25 ID**

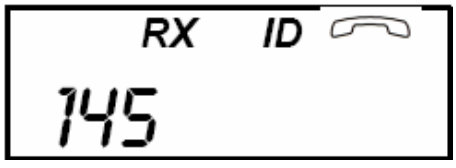
Receive Call

- **Flashing Handset Indicates Incoming Unit-to-Unit Call**
- **Press * Key to View Caller ID**
- **PTT to Respond**

Send Call

- **Press * Key to Enter Unit-to-Unit Mode**
- **Select 0-9 to Select Preprogrammed Caller ID**
- **PTT to Send Call**

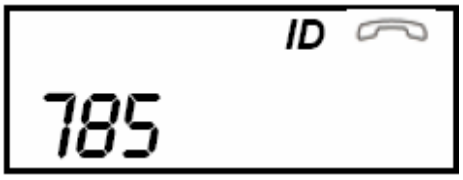
Unprogrammed Call



- **Press * Key to Enter Unit-to-Unit Mode**
- **Press CLR Key to Clear Displayed ID "<" Indicates Direct Entry**
- **Use Number Keys to Enter Desired P25 ID**
- **PTT to Send Call**

Adding a Quick Call ID

Add Quick Call

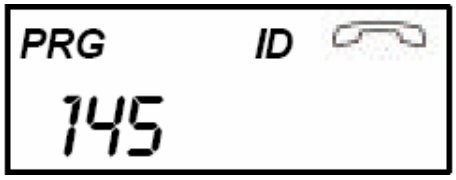


- **Press * Key to Enter Unit-to-Unit Mode**
- **Select 0-9 to Select Desired Quick Call Location**

Add Quick Call Label

- **Press CLR Key to Clear Current Label**
- **Press PRI Key to Scroll Though Available Symbols**
- **Press FCN Key to Shift Symbol to Left**
- **Press PRI Key to Select Next Symbol**
- **Press ENT to Save Label And Step to P25 ID**

Add Quick Call ID



- **Press CLR Key to Clear Current ID**
- **Use Number Keys to Select New ID**
- **Press ENT to Save New P25 ID**

Add Quick Call

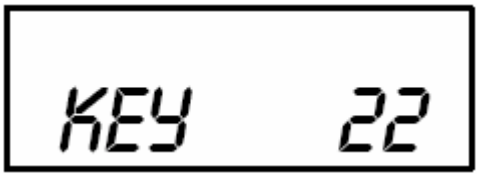
- **Press CLR Key to Exit Program Mode**

DES/AES Encryption

Encryption Indicator

- **"G" is Displayed On Encrypted Channels**

Select Encryption Key



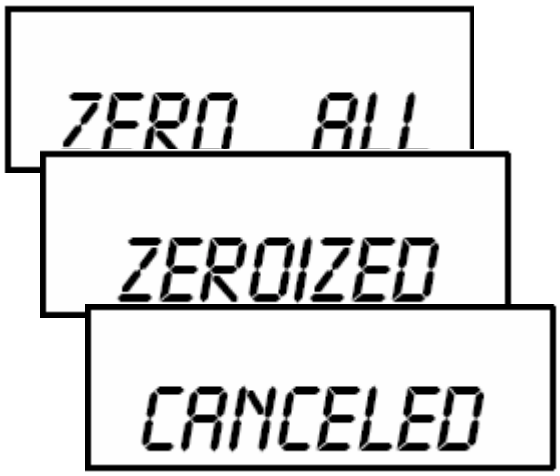
- **Press FCN Key to View Current Encryption Key**
- **Use Number Keys to Select New Key (1-32)**
- **Press ENT to Set Key**

Invalid Encryption Key

"NO KEY" will be Displayed When:

- **Selected Key is Empty**
- **Selected Key has Invalid Storage Location Number**
- **Attempting an Analog Transmission on an Encrypted Channel**

Zeroize



- **Press and Hold CLR Key Until "ZERO ALL" is Displayed**
- **While Holding CLR Key, Press PTT to Zeroize**
- **Releasing CLR Button Prior to PTT to Cancel Operation**

Note: Zeroizing sets all password to FFFFFF

DPHx Group Programming

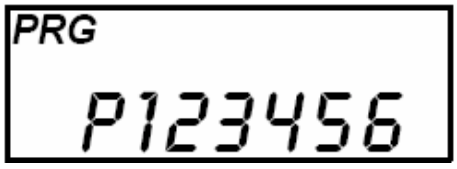
Enter Password

- **Select Six Digit Password**
- **Press Enter Key**
- **Factory Default 000000**

Group Settings

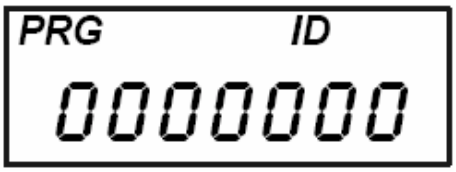
- **Use FCN Key to Scroll Through Settings**

Group Password



- **Press the CLR key**
- **Enter a new six-digit password**
- **Press the ENT key to store**

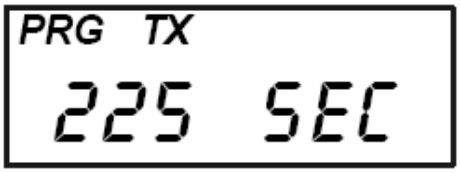
DTMF ID



- **Press the CLR key**
- **Enter a new DTMF ID Number (1-7 digits)**
- **Press the ENT key to store the new ID**

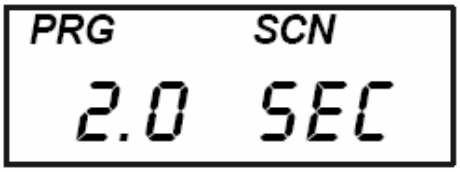
DPHx Group Programming

Transmit Timeout



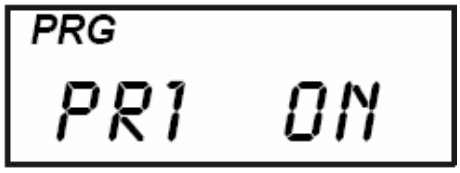
- **Advance Timeout Time by 15 Second Intervals with PRI Key (0-225 seconds)**
- **Press Enter Key to Set**

Scan Hold Time



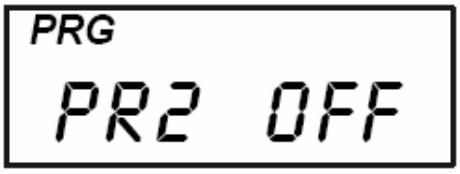
- **Advance Can Hold Time by .5 Second Intervals with PRI Key (0-7.5 seconds)**
- **Press Enter Key to Set**

Priority 1



- **Use Number Keys to Select Priority One Channel or Step Through with PRI Key**
- **Settings: On, Off or Channel Number**
- **Press Enter Key to Set**

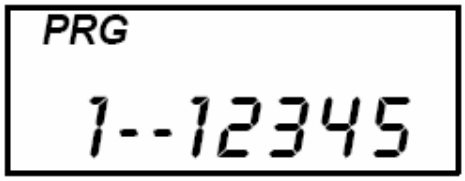
Priority 2



- **Use Number Keys to Select Priority Two Channel or Step Through with PRI Key**
- **Settings: On, Off or Channel Number**
- **Press Enter Key to Set**

DPHx Group Programming

Group Settings One



When a function is enabled, the corresponding number in the display will flash.

When the function is disabled the number is steady.

To enable to disable a function press the number key corresponding to that function.

1. Battery Saver Inhibit
When function 1 is enabled (flashing) the battery saver is turned off. The battery saver should be turned off only for getting proper voltage readings during service or for systems requiring fast squelch attack time.

2. Group Scan List
When function 2 is enabled (flashing) the current group will be scanned when the radio is operating in Group Scan Mode.

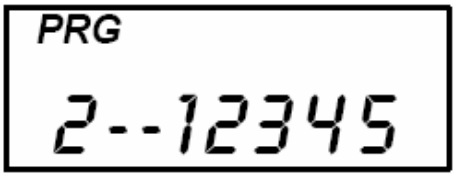
3. Transmit on Priority One
When function 3 is enabled (flashing) transmissions will occur on PR1 channel when operating in Single or Dual Priority Scan Mode

4. PRI Key Lockout
When function 4 is enabled (flashing) the PRI key is locked out in the Operating Mode. The user will not be able to change the designation of the Priority 1 Channel.

5. Scan List Lockout
When function 5 is enabled (flashing), the user will not be able to change the channels in the Scan List. When disabled (steady), the user can edit the Scan List using the ENT and CLR keys.

DPHx Group Programming

Group Settings Two



When a function is enabled, the corresponding number in the display will flash.

When the function is disabled the number is steady.

To enable to disable a function press the number key corresponding to that function.

1. User Selectable Code Guard

When function 1 is enabled (flashing) the user will be able to press the keypad to independently select the Channel Guard values programmed into Channels 1 through 16 while operating on any channel in that group.

2&3. Busy Channel Operating Modes

Busy Channel Indicator - LED illuminates when a signal is received.
Busy Channel Lockout - LED illuminates and PTT disabled
Lockout Override - PTT can be activated by rotating Squelch knob off detent.

Operation	Function 2	Function 3
Indication	Disable (Steady)	Enable (Flashing)
Lockout	Enable (Flashing)	Enable (Flashing)
Override	Enable (Flashing)	Disable (Steady)

4&5. DTMF and ANI Settings

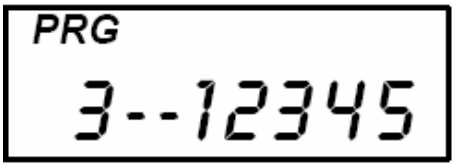
When function 4 is enabled (flashing) the ANI ID number is transmitted with each PTT

When function 5 is enabled (flashing) the keypad becomes active for manual DTMF

When functions 4 and 5 are both enabled (flashing) the ANI tone sequence is transmitted when the ENT key is pressed while transmitting.

DPHx Group Programming

Group Settings Three



When a function is enabled, the corresponding number in the display will flash.

When the function is disabled the number is steady.

To enable to disable a function press the number key corresponding to that function.

1. Reserved for Future Option

2. Reserved for Future Option

3. Backlight on Display Change

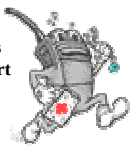
When function 3 is enabled (flashing), the display will illuminate each time the display receives input. This includes changes in the selected channel or scan channel, and the PR, TX, and SCN annunciates.

4. Backlight on Key Press

When function 4 is enabled (flashing), the display will illuminate each time a key is pressed.

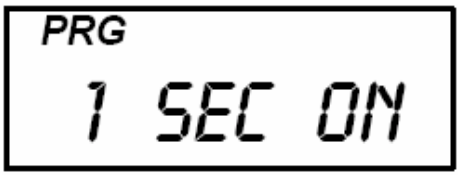
5. Alphanumeric Display Mode

When function 5 is enabled (flashing), the display operates in Alphanumeric Mode, enabling the display of channel labels. When disabled (steady), the display operates in Numeric Only Mode.



DPHx Group Programming

Backlight Duration



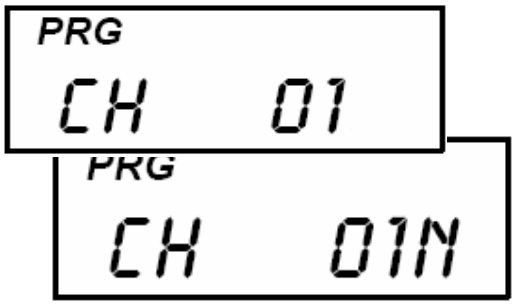
- **Advance Backlight time by 1 second intervals with PRI key (Always On, Always Off or 1- 7.5 seconds)**
- **Press Enter Key to set**

Group Label

- **Press CLR key to clear current label**
- **Press PRI key to scroll though available symbols**
- **Press FCN key to shift symbol to left**
- **Press PRI key to select next symbol**
- **Press ENT to save label**

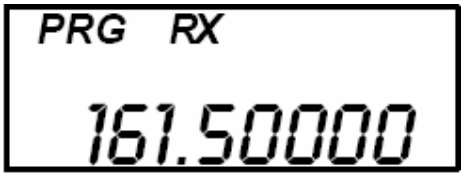
DPHx Channel Programming

Bandwidth Setting



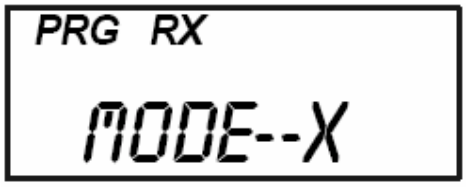
- **Press the # key to toggle between wideband and narrowband operation**

Receive Frequency



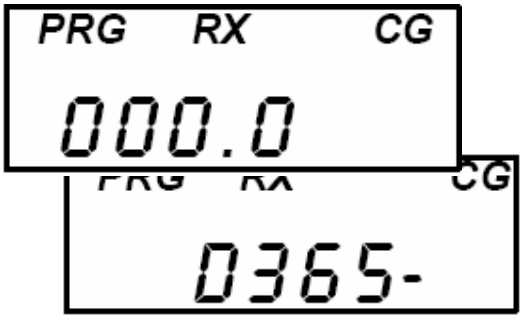
- **Press CLR to clear RX Frequency**
- **User the number keys to select desired frequency. (136 to 174 MHz, 2.5kHz increments)**
- **Press the ENT key to set frequency**

Receive Mode



- **Use the PRI key to scroll through options**
- **Press Enter Key to store**
- **Options: Analog, Digital or Mixed Mode**

Receive Code Guard



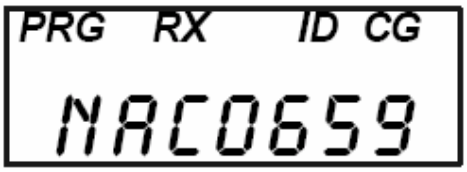
- **Press CLR to clear Code Guard**
- **User number keys to select desired frequency. (67 to 255.9 Hz)**
- **Press ENT to set**
- **Press # key to enter Digital Coded Squelch**

RELM Wireless Technical Support

(800) 422-6281

DPHx Channel Programming

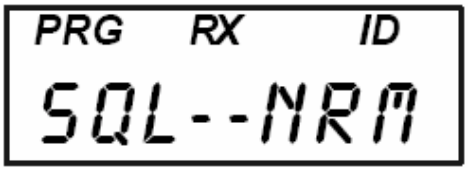
Receive Network Access Code



- **Press CLR to clear NAC**
- **User number keys to select the required NAC in decimal format (0000 to 4095)**
- **Press ENT to set**

*3966 is a receive only NAC and is the digital equivalent of carrier squelch

Squelch Operation



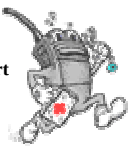
- **Normal or Selective. Toggle with PRI**
- **Normal squelch is used to mimic analog operation. The digital equivalent of carrier squelch is achieved by programming the receive NAC = 3966**
- **Selective squelch is used for processing 'Group Calls' and 'Unit-to-Unit Calls'.**

Transmit Frequency

- **Press CLR to clear RX Frequency**
- **User the number keys to select desired frequency. (136 to 174 MHz, 2.5kHz increments)**
- **Press the ENT key to set frequency**

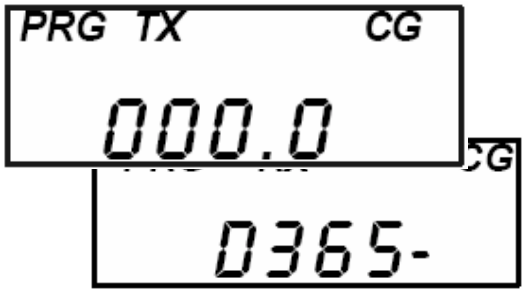
Transmit Mode

- **Use the PRI key to scroll through options**
- **Press Enter Key to store**
- **Options: Analog, Digital or Mixed Mode**



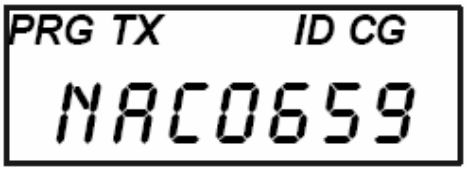
DPHx Channel Programming

Transmit Code Guard



- **Press CLR to clear Code Guard**
- **User number keys to select desired frequency. (67 to 255.9 Hz)**
- **Press ENT to set**
- **Press # key to enter Digital Coded Squelch**

Transmit NAC

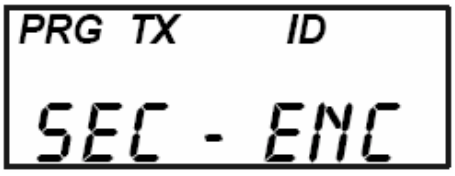


- **Press CLR to clear NAC**
- **User number keys to select the required NAC in decimal format (0000 to 4095) 3966 and 3967 are reserved for receive only.**
- **Press ENT to set**

Talk Group

- **Press CLR to clear The Talk Group**
- **User number keys to select the desired Talk Group (0 to 65535)**
- **Press ENT to set**

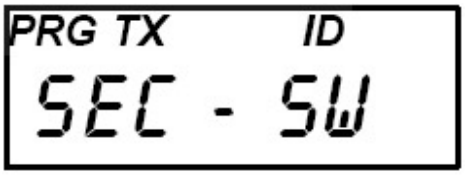
Transmit Security Mode



- **Requires DES/AES Option**
- **Toggle Clear, Encrypted or Clearl with PRI Key**
- **Press ENT to Set**

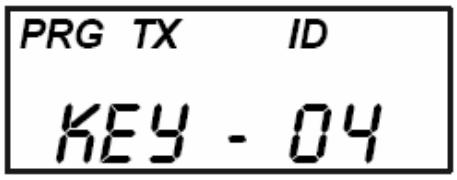
DPHx Channel Programming

Key Selection Options



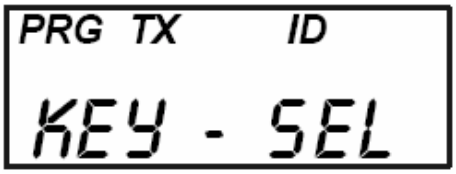
- **Requires DES/AES Option**
- **User Number Keys To Select the Default Encryption Key**
- **Press ENT to Set**

Encryption Key Assignment



Requires DES/AES Option
Toggle Selectable or Locked with PRI Key
Press ENT to Set

Encryption Key Lock



- **Toggle Selectable or Locked with PRI Key**
- **Press ENT to Set**

Channel Label

- **Press CLR key to clear current label**
- **Press PRI key to scroll though available symbols**
- **Press FCN key to shift symbol to left**
- **Press PRI key to select next symbol**
- **Press ENT to save label**

DPHx Cloning

Cloning Mode

- **Press * to Enter Cloning Mode**

Send Clone

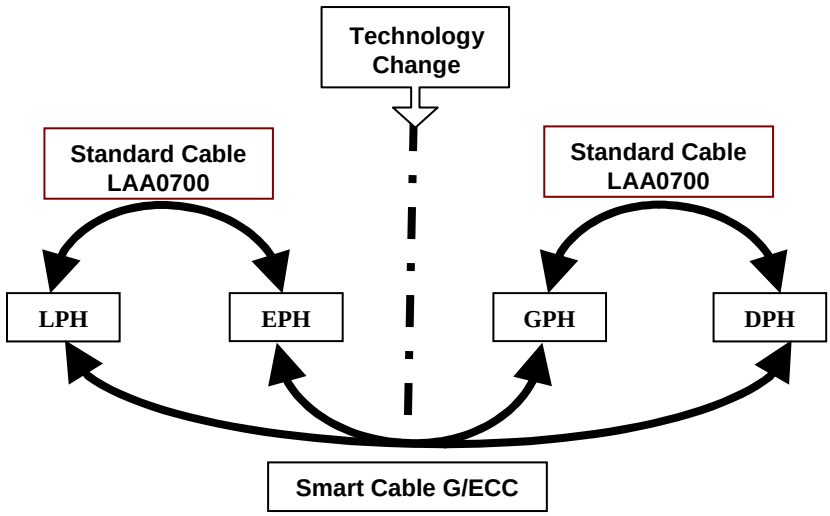
- **Press FCN Key to Send Clonable Information**

Cloning Fail

- **If Radio Information is not Successfully received by the Slave Radio, the Master Radio will Flash "FAIL" and an Alert Tone Will Sound**

Note: Some BK Radios may be programmed may be programmed to reject an incoming clone

Cloning Cables



DPHx Cloning

Master Radio	Slave Radio	Cable Required
DPH	DPH, GPH	LAA0700 or G/ECC
	EPH, LPH	G/ECC
GPH	GPH, DPH	LAA0700 or G/ECC
	EPH, LPH	G/ECC
EPH	EPH, LPH	LAA0700 or G/ECC
	DPH, GPH	G/ECC
LPH	LPH, EPH	LAA0700 or G/ECC
	DPH, GPH	G/ECC
NOTE: The G/ECC cloning cable can be used to clone between any of the above models		

What Clones

All BK Radio VHF Models

- All Valid Transmit and Receive Frequencies, Code Guards and Bandwidth Settings
- Scan settings
- Time out timer
- Priority Settings
- Keyboard Lockouts

GPH/DPH

- Display Labels & Settings
- Group Password
- Group Scan Settings
- Low Power Settings

GPH/DPH

- Digital/Analog/Mixed Mode Settings
- Group Password

*Global and Encryption Settings Do Not Clone

Glossary

AES	APCO Project 25 Advanced Encryption Standard
ANI	Automatic Numeric Identification
CG	Channel Guard
CLR	Clear
Cloning	The process of copying data from one radio, called “master,” to other radios, called “slaves” or “clones.”
Channel Guard	A sub audible tone, a code (analog) or a Network Access Code (digital) for selective calling and receiving.
DES	APCO Project 25 Encryption Standard
Detent	The click/hesitation you feel as you turn a knob from one position to another.
DTMF	Dual Tone Multiple Frequency
DTMF Tones	Tones that sound like those used by a standard push-button telephone.
ENT	Enter
FCN	Function
GRP	Group Label
ID	Digital reception/transmission – ‘**I**t’s **D**igital.”
LCD	Liquid Crystal Display
Mixed Mode	Allows Analog and Digital operation on the same channel
NAC	Network Access Code for digital channel.
PR	Priority Channel
PRG	Program
PRI	Priority
PTT	Push To Talk
RTA	Repeater Talk Around
RTX Channel	Ready to Transmit Channel
RX	Receive
SCN	Scan
SQ	Squelch
Squelch	A control that eliminates background noise.
Talkback Scan	When scanning, if a signal is present, the scan will stop and you will hear the signal. If you then push the PTT switch to talk back to the person, you are in Talkback Scan Mode.
TGID	Talk Group ID
Time-Out Timer	A feature that limits the duration of calls.
TX	Transmit